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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/586,500	07/13/2006	Tim Jungkamp	12810-00318-US	4602

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EXAMINER
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KOSACK, JOSEPH R

ART UNIT	PAPER NUMBER
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1626

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PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/586,500	<b>Applicant(s)</b> JUNGKAMP ET AL.	
	<b>Examiner</b> Joseph R. Kosack	<b>Art Unit</b> 1626	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 20 January 2010.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 11-27 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 11-27 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |   |   |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                    | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)         | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____   | 6) <input type="checkbox"/> Other: _____                          |

### **DETAILED ACTION**

Claims 11-27 are pending in the instant application.

#### ***Previous Claim Rejections - 35 USC § 103***

Claims 11-26 were previously rejected under 35 U.S.C. 103(a) as being unpatentable over Walter (USPN 3,773,809).

Claims 11-27 were previously rejected under 35 U.S.C. 103(a) as being unpatentable over Walter (USPN 3,773,809) in view of Tam et al. (USPN 5,723,641).

The Applicant has traversed the rejection on the grounds that the prior art does not teach the recycling of 3-pentenitriles as in stream 18 and the addition of 3-pentenitrile to column K4 as shown in Example 2.

The Examiner respectfully disagrees. Firstly, it is extremely common in the synthetic organic chemistry art to recover starting materials and use them again in order to increase the overall yield of the reaction. Secondly, the addition of 3-pentenitrile to column K4 is not required by the instant claims. The Applicant could include the addition of 3-pentenitrile to stream 6 to go into column K4 as a limitation to claim 11 to potentially overcome the obviousness rejection. However, the rejections must be maintained at the present time.

#### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 11-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Walter (USPN 3,773,809).

The claims are drawn to an eight step continuous procedure for preparing adiponitrile and methylglutaronitrile. Dependent claims 12-16 provide that the reaction is a homogeneous hydrocyanation of butadiene, that the extractant is anhydrous, that at least part of stream 9 and/or stream 11 is recycled into step (c), that step (g) be a two step distillation, and that stream 9 contains less than 10% by weight of pentenenitriles.

Art Unit: 1626

Walter teaches a process for reacting pentenenitriles with hydrogen cyanide with a nickel(0)-phosphorus catalyst and a zinc chloride promoter and produces adiponitrile and methylglutaronitrile. See Example 6, columns 8-9. Walter then teaches extraction of the nickel complex from the products and zinc chloride by using cyclohexane. See Example 6, columns 8-9. Finally, Walter teaches the distillation of the extractant to yield a recovered nickel complex. See Example 7, column 9.

Walter does not teach the distillation for steps b, e, f, g, and h. Walter also does not teach specifically the dependent claims as described above.

To those of ordinary skill in the art, distillation is a common method for separating liquids from each other and specific techniques such as simple distillation, fractional distillation, dual stage distillation, and vacuum distillation are commonly employed. Each distillation step not explicitly mentioned by Walter essentially separates a more volatile component from less volatile components with a high degree of specificity for fractional distillation and vacuum distillation. Therefore, the distillation steps cannot be looked at as nov-obvious. As to the dependent claims, it doesn't matter whether the reaction starts from the butadiene or the pentenenitrile stage, the process would run the same as the hydrocyanation of butadiene yields pentenenitriles. The extraction of Walter does not show any water in the list of products, so it can be safely assumed that the extraction is anhydrous. Those of ordinary skill in the art would know that a distilled product stream could be recycled into the reaction process in order to increase the yield of reaction relative to the amount of starting material used.

Therefore, it would be obvious to the person of ordinary skill in the art to expand upon the process of Walter to create a fully continuous process using common distillation techniques in order to generate the instant invention as there is a design need to create synthetic processes that are automatic provide the particular components in a mostly pure, if not fully pure, form.

Claims 11-27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Walter (USPN 3,773,809) in view of Tam et al. (USPN 5,723,641).

The claims are drawn to an eight step continuous procedure for preparing adiponitrile and methylglutaronitrile. Dependent claims 12-16 provide that the reaction is a homogeneous hydrocyanation of butadiene, that the extractant is anhydrous, that at least part of stream 9 and/or stream 11 is recycled into step (c), that step (g) be a two step distillation, and that stream 9 contains less than 10% by weight of pentenenitriles.

Walter teaches a process for reacting pentenenitriles with hydrogen cyanide with a nickel(0)-phosphorus catalyst and a zinc chloride promoter and produces adiponitrile and methylglutaronitrile. See Example 6, columns 8-9. Walter then teaches extraction of the nickel complex from the products and zinc chloride by using cyclohexane. See Example 6, columns 8-9. Finally, Walter teaches the distillation of the extractant to yield a recovered nickel complex. See Example 7, column 9.

Walter does not teach a bidentate phosphorus ligand complex or the distillation for steps b, e, f, g, and h. Walter also does not teach specifically the dependent claims as described above.

Tam et al. teaches a zero valent nickel bidentate phosphorus ligand complex for hydrocyanations. See column 2, lines 16-54.

To those of ordinary skill in the art, distillation is a common method for separating liquids from each other and specific techniques such as simple distillation, fractional distillation, dual stage distillation, and vacuum distillation are commonly employed. Each distillation step not explicitly mentioned by Walter essentially separates a more volatile component from less volatile components with a high degree of specificity for fractional distillation and vacuum distillation. Therefore, the distillation steps cannot be looked at as nov-obvious. As to the dependent claims, it doesn't matter whether the reaction starts from the butadiene or the pentenenitrile stage, the process would run the same as the hydrocyanation of butadiene yields pentenenitriles. The extraction of Walter does not show any water in the list of products, so it can be safely assumed that the extraction is anhydrous. Those of ordinary skill in the art would know that a distilled product steam could be recycled into the reaction process in order to increase the yield of reaction relative to the amount of starting material used.

Therefore, it would be obvious to the person of ordinary skill in the art to expand upon the process of Walter to create a fully continuous process using common distillation techniques in order to generate the instant invention as there is a design need to create synthetic processes that are automatic provide the particular components in a mostly pure, if not fully pure, form.

### ***Conclusion***

Claims 11-27 are rejected.

**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Joseph R. Kosack whose telephone number is (571)272-5575. The examiner can normally be reached on M-Th 6:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Joseph McKane can be reached on (571)-272-0699. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.



Art Unit: 1626

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Joseph R Kosack/  
Examiner, Art Unit 1626